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JUNE 21, 1952

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE

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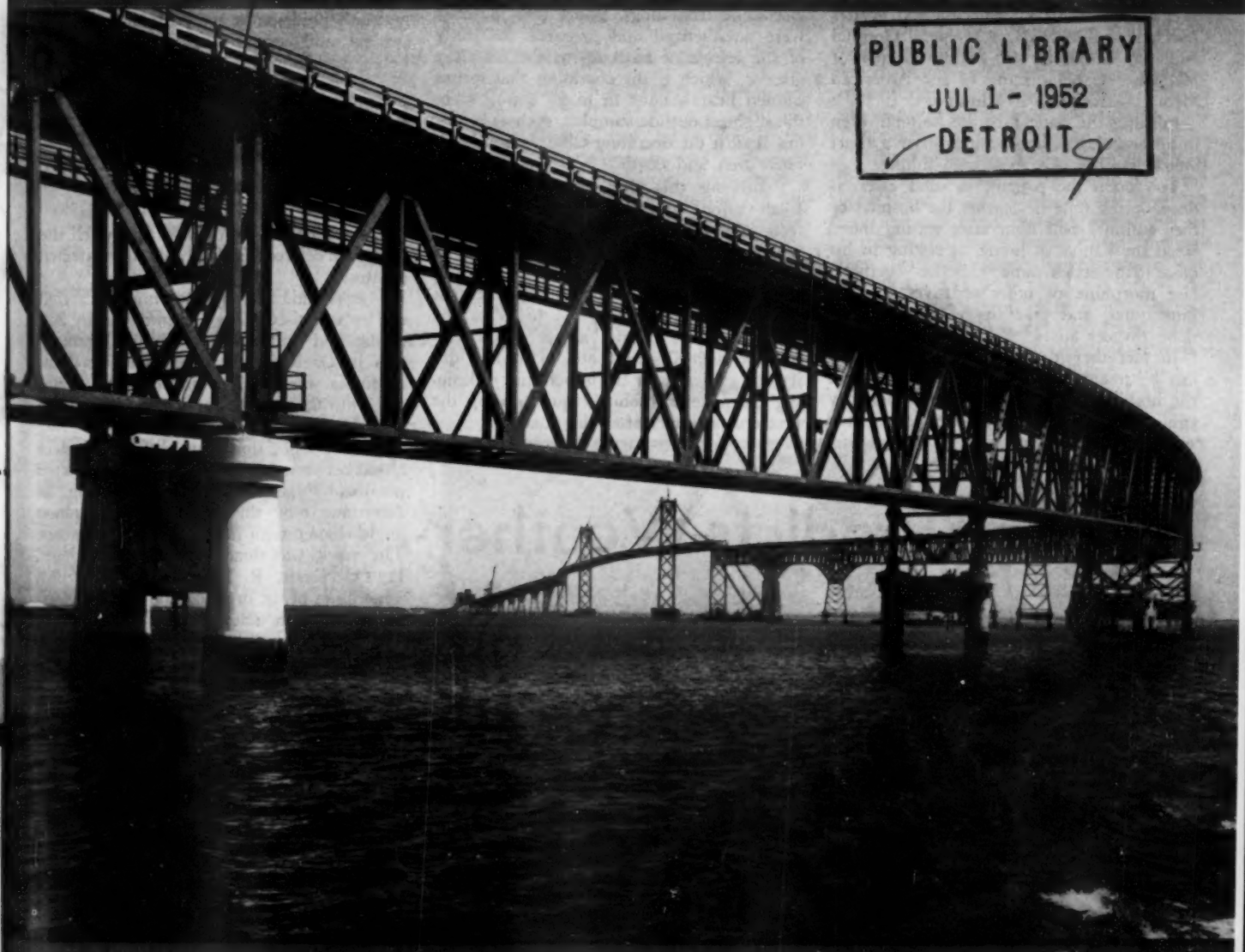

Chesapeake Bay Bridge

See Page 391

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MEDICINE

Quiet After Heart Attack

Many deaths of young men suddenly hit by blocking of coronary arteries could be prevented if victims were not moved during the crucial hours following the attack.

➤ MANY, PERHAPS two-thirds, of sudden deaths from heart disease in young men could be prevented if the patient is kept very, very quiet for the first four hours after a heart attack.

Research suggesting this was reported by Drs. Elmer Milch, Richard W. Egan, Ting Wei Hsia, Arthur A. Anderson and Walter Zimdahl of Buffalo, N. Y., General Hospital and the University of Buffalo School of Medicine at the meeting of the American Medical Association in Chicago.

Rushing the patient to the hospital, even in an ambulance, immediately after a heart attack is a mistake, these men think.

Too often the patient, in such cases, is dead by the time he reaches the hospital or dies within a half hour after getting there. Keep the patient at home, or resting in his office if the attack came while he was there. Use morphine or other sedatives to keep him quiet, and give oxygen if necessary, these doctors advise.

In fact they think many heart patients can be treated just as well at home as in the hospital. But the important thing, they stressed, is not to move the patient too soon. When he is moved, the hospital should be notified in advance so that the patient can be taken directly to his bed and not kept waiting for the usual admission procedures. And the patient's doctor should be at the hospital when the patient arrives, to supervise the handling and treatment.

The evidence which backed up this advice came from dogs. When these animals were anesthetized and prepared for study of the effects of blocking of the coronary arteries, which is the condition that causes sudden heart deaths in many young men, the slightest outside stimulus, such as brushing against the operating table, caused heart fibrillation and death.

Following this discovery, the scientists tried various means of reducing these effects of outside stimuli. When the sympathetic nerves in the chest were cut, so that the stimuli were blocked from reaching the heart, the death rate during the first half hour was cut from 42% to 14%. The Buffalo doctors do not advise this operation for victims of heart attacks but consider it good evidence for the importance of keeping the patient absolutely quiet during the first crucial hours after the attack.

Science News Letter, June 21, 1952

METEOROLOGY

Machine Predicts Weather

➤ A SIGNIFICANT advance in weather forecasting and in understanding the vast forces that decide our weather is being made with the aid of the fastest and latest of electronic computers, just unveiled at the Institute for Advanced Study at Princeton, N. J.

This advance has come about through the use of the machine in the system of numerical forecasting. A human being with a desk calculator, working 30 days a month eight hours a day, would take 24 months to complete one 24-hour weather forecast, doing the same calculations now given to the machine. The ENIAC, a larger but slower machine, doing the same calculations, takes 48 hours.

The new computer has successfully completed one 24-hour forecast in three hours, with the machine working at half speed. At top speed, and with many of the experimental calculations eliminated, it is expected that the machine can complete a 24-hour forecast in 48 minutes.

The machine took six years to design and construct. Dr. John von Neumann of the Institute was at the head of the staff which did the job, and is now top man of the calculator division of the Institute. Dr. Jule G. Charney, one of the nation's top meteorologists, carried out the forecasting problems.

Present forecasts are made for the general weather pattern at approximately 18,000 feet altitude over Canada, the United States, about one-third of the Atlantic and the Caribbean. The calculator successfully completed the computations for one 24-hour and one 12-hour forecast, together with several other unrelated problems, before it was unveiled.

Forecasts made so far, Dr. Charney told SCIENCE SERVICE, point to the need for making a three-dimensional numerical forecast—one taking into account the weather patterns at perhaps eight levels, instead of only at 18,000 feet.

The two-dimensional, or one-level, forecasts indicate that it is necessary to find out the relative importance, in weather changes, of the process by which potential energy, derived from the sun, is changed into the energy of motion. Clues to this will be found by using the machine on three-dimensional forecasts.

With the computer, Dr. Charney can use a great mass of information about the weather, far more than any individual forecaster can hold in his head. The machine has a memory bank, consisting of 40 cathode ray tubes, which holds formulas representing weather conditions at 361 grid points over North America, and which also holds the orders given to the machine as to what to do with this information.

This information is coded into "language" the machine can understand. Then it executes about 1,660,500 orders—such as "add this set of figures"—to predict the weather pattern one hour from now. Next it automatically predicts the second hour's weather pattern, and continues until it reaches 24 hours from now.

Science News Letter, June 21, 1952

PLANT PATHOLOGY

Electrical Diagnosis Spots Healthy Potatoes

➤ ELECTRICAL DIAGNOSIS may tell the difference between healthy and virus-infected potatoes.

This is indicated by experiments carried out by scientists of the Commonwealth Scientific and Industrial Research Organization in Canberra, Australia. The electrical diagnosis was made by sticking two metal pins into the potatoes and determining the impedance between them.

In most cases significant differences were found between the healthy and virus-infected potatoes. Experiments are continuing to determine how the impedance and phase angle change with maturity of the potatoes. The work was done by C. G. Greenham, D. O. Norris, R. D. Brock and A. M. Thompson of the organization and reported in the British scientific journal NATURE (June 7).

Science News Letter, June 21, 1952

MARINE BIOLOGY

Rare Snake Mackerel Snagged by Hook and Line

➤ A RARE snake mackerel, more than three feet long, has been caught on a hook and line, possibly the first ever so snagged, the Woods Hole Oceanographic Institution, Woods Hole, Mass., has reported.

The snake mackerel was hooked by Frank J. Mather, III, from the research vessel *Atlantis* during an oceanographic investigation between West Africa and Brazil last winter.

Two of the snakelike members of the mackerel tribe jumped aboard the raft Kon-Tiki near the equator in the Pacific Ocean. These three are believed to be the only specimens of this fish ever seen alive.

Science News Letter, June 21, 1952

SURGERY

Monkey Lungs for Babies

Artificial heart-lung apparatus uses monkey lungs instead of mechanical means for putting oxygen into the blood during operation for heart-defect.

➤ MONKEY LUNGS may be the future means of saving babies born with the most hopeless form of heart defect.

The monkey lung is part of an artificial heart-lung apparatus that is designed to keep these babies alive while surgeons operate to repair the heart defect. That apparatus, designed by Campbell Cowan, engineer of the Banting Best Institute, Toronto, Canada, was shown at a meeting of the American Medical Association in Chicago by Drs. W. T. Mustard, A. L. Chute and A. Sirek of the University of Toronto.

Other heart-lung machines use a mechanical heart to pump blood and a mechanical lung to put oxygen into the blood. In the one shown at the meeting, the pumping feature is mechanical but the monkey lung does the important job of putting oxygen into the blood. In this way it is much closer to the natural way in which oxygen is put into the blood.

The new heart-lung machine has so far been tried on eight babies. Five of them were doomed to die within the first few days or weeks of their lives because the big blood vessels from their hearts were reversed in position. The one that should have been on the right side of the heart was on the left, and the left one was on the right side of the heart. As a result, all the blood was kept circulating through the body without ever reaching the lungs to get fresh oxygen.

Every year about 1,000 babies in the United States and 100 in Canada are born with this hopeless defect, although they are otherwise perfectly normal. The hope of the Canadian scientists is that with the artificial heart and lung apparatus, the babies can be kept alive long enough for surgeons to operate and transpose the big blood vessels back into the normal position.

None of the eight babies on which the machine was used survived. This, however, was not because of any fault of the machine. The babies were just too sick to survive. Three of them had a very severe form of the tetralogy of Fallot, the "blue baby" condition for which the first of these heart operations was devised.

The new heart-lung machine with the monkey lung in it was able to keep blood circulating through the babies' bodies for from five minutes to four hours. In two cases, the surgeons were able to complete the operation. One child survived 24 hours. In the other of these two cases, the two big blood vessels were of such different size that it was not possible to transpose them and sew them into the new position. The end of one would not have fit the stump of the other. This baby, however, who had been on the heart-lung circuit for 10 minutes with his own heart completely bypassed, survived for 14 days.

Science News Letter, June 21, 1952

METALLURGY

Improve Process for Aluminum Coating Steel

➤ AN IMPROVED process of coating steel and other ferrous metals with aluminum, revealed by General Motors, not only protects the base metals from rusting but also makes the coated product a heat-resistant material.

This means that its use may conserve a number of strategic alloys now needed in high temperature applications.

The process, developed by Alfred L. Boegehold and assistants at the GM Research Laboratories in Detroit, is said by the scientists to be a simple, practical and inexpensive method for producing an aluminum base alloy coating over ferrous metals of high quality.

Known as "Aldip," the process can be used to coat shaped articles or, in a continuous process, for coating sheet, wire or rod stock.

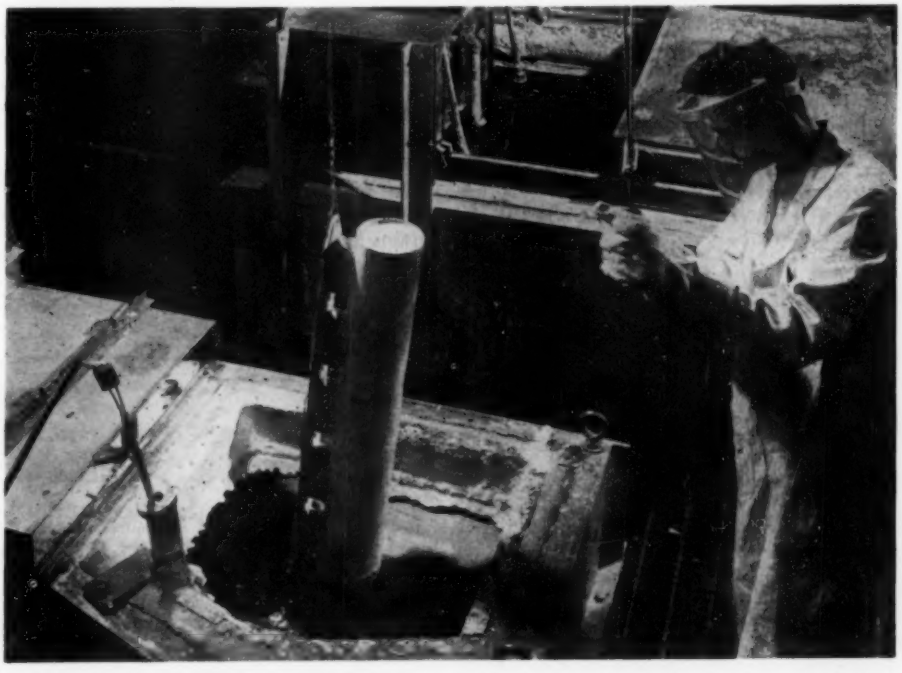
The process is now in pilot plant use at a GM plant in coating heat exchangers for an auxiliary tank motor. The heat exchanger consists of two small tanks connected by a series of parallel tubes roughly similar to a miniature radiator. The exchangers may be in complex shapes but they can still be easily handled by the new process.

In the process, these heat exchangers are dipped in an alkaline cleaner, washed in hot water, run through an acid pickle, rinsed and dried in a furnace until ready for coating. Then they are dipped approximately four minutes in a bath of preheating salt at temperatures near 1,300 degrees Fahrenheit.

Next they are transferred to an aluminum bath which is covered by a half-inch layer of salt flux. About 45 seconds later they are returned, while still red hot, to the preheat salt bath and slowly raised. Inside and out they assume a silvery appearance as the coating cools.

Microscopic examination of the coating on steel reveals an outer coat of aluminum-bearing iron. A second layer, next to the steel, is an iron-aluminum alloy.

Science News Letter, June 21, 1952



ALUMINUM DIP BATH—The steel exhaust manifold shown here is being lifted from a molten aluminum bath that coats it with aluminum inside and out within 60 seconds. The coating resists rust and, in some cases, acts as a heat-resistant material that may conserve strategic alloys needed for defense production.

AERONAUTICS

America To Get Jetliners

➤ JET-PROPELLED airliners on American airways may be expected in the relatively near future, now that the U. S. Air Force has withdrawn its former objections.

But the first of the transports with turbojet power may be purchased in England. American jetliners are still on the drafting board while British transports of the type are in the air.

However, the jetliners to be purchased by American air transport companies will not be the British de Havilland Comet now in regular service between London and Johannesburg, South Africa. Instead, they will be the Comet II, a faster and larger plane than the Comet I. The new model will be in service in about two years. A still larger and faster airplane, the Comet III, is promised for 1956.

The U. S. Air Force objection to civilian jet propulsion was based on fear that the development of civil jet airliners at present might interfere with military aircraft production. Its objections were presented by letter to a congressional committee considering a bill to give federal financial aid to airplane manufacturers to help them construct jetliners.

The Air Force now has reversed its stand of less than a month ago and expressed itself in favor of the construction of civilian jet-propelled airliners.

Approximately four-fifths of the commercial airplanes in use in the world today are American-built. But England has assumed leadership in the production of jetliners. Canada also has one jetliner that already has made many flights. The present Comet I is said not to appeal to American aircraft producers because of its low passenger capacity and its operating cost.

Comet II will have four Rolls Royce jet engines, each with a 6,500-pound thrust, or 30% more than the present Comet and will have greater carrying capacity. Comet III will have 7,500-pound-thrust engines. It will be able to fly at about 550 miles an hour and will have capacity for 55 passsengers.

Science News Letter, June 21, 1952

PUBLIC HEALTH

States Join to Fight Rabies in Wild Animals

➤ RABIES IN wild animals, particularly foxes and skunks, has increased to such an extent in the District of Columbia and 11 states of the south Middle Atlantic region that an Eastern Regional Rabies Council has been established to stop the threat to humans, cattle and pets such as dogs, cats and horses.

States involved are: Pennsylvania, Ohio, Maryland, Delaware, Virginia, West Virginia, Tennessee, Kentucky, North Carolina, South Carolina and Georgia.

Mutual rabies control programs at the state level and prompt reporting of rabies cases in all animals are among measures the new council will plan for quick action. The U. S. Public Health Service, U. S. Fish and Wildlife Service and U. S. Department of Agriculture's Bureau of Animal Industry are cooperating.

Science News Letter, June 21, 1952

NUTRITION

X-Ray Sterilized Food Declared Dangerous

➤ BE ON guard against foods that have been sterilized with X-rays, such as fatty meats, milk, butter, salad oils, certain grains and seeds.

So warns Dr. James F. Mead, chief of the biochemistry division of the Atomic Energy Project at the University of California at Los Angeles School of Medicine.

Recent research by Dr. Mead and his associates has shown that X-irradiation has a damaging effect on the fatty acids found in many food substances.

A chain of free radicals is released when such food is irradiated, thus destroying not only essential fatty acids and vitamins, but acting on other substances present to produce poisonous peroxides.

Science News Letter, June 21, 1952

Question Box

BIOLOGY

How can sewage be put to good use? p. 390.

ENGINEERING

By what method can engineers study a pipeline network before it is built? p. 390.

HOME ECONOMICS

How do mothers think children's clothes should be labeled? p. 396.

MEDICINE

What medicine can help cure a kind of baldness? p. 391.

How did a jellyfish lead to studies of allergy? p. 397.

What are five steps to take if you have hiccups? p. 399.

NUTRITION

Why should you not blame the hen for poor eggs in the summer? p. 393.

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MEDICINE

Remedy for Leg Cramps

Painful leg cramps of expectant mothers are due to milk and calcium phosphate. Some reduction of milk and taking aluminum hydroxide advised.

➤ THE PAINFUL leg cramps that afflict expectant mothers, usually just as they awaken and stretch in the morning, were blamed on milk and calcium phosphate in a report by Dr. Ernest W. Page of the University of California Hospital, San Francisco, to the American Medical Society meeting in Chicago.

As a remedy, Dr. Page advises a "moderate reduction of milk" and taking aluminum hydroxide with each meal.

This reverses advice usually given to pregnant women. For many years doctors have known that during the latter part of pregnancy, about three-fourths of the expectant mothers have a heightened irritability of the nerve and muscle systems.

It has been commonly believed that calcium has something to do with this. And many obstetricians recommend an increase of calcium and vitamin D to relieve the leg cramps. Usually they advise their patients to drink more milk and prescribe tablets, or pills, of dicalcium phosphate.

Experience with patients during a 10-year period convinced Dr. Page that the extra milk and large amounts of dicalcium phosphate actually induced leg cramps. Cramps were reduced when calcium was given in the form of calcium lactate or gluconate.

Poor women, Dr. Page also found, suffer less from leg cramps than women in higher economic classes. Only 14 out of 100 women who came consecutively to the clinic while pregnant reported leg cramps, compared to 56 out of 100 private patients. The private patients ate about twice as much milk, eggs and meat as the clinic patients.

These foods are rich in phosphorus and Dr. Page believes the phosphorus is actually the trouble maker. Calcium and milk come into the situation because there is a reciprocal relation between the calcium and the phosphorus in the blood. Giving large amounts of phosphates by mouth, for example, can actually cause tetany in dogs because the phosphorus depresses the calcium in the blood.

Drinking a quart of sweet milk may cause an actual fall in the amount of calcium in the blood and a rise in phosphates within eight hours. This is not true of milk acidified with lactic acid. The buffering action of ordinary milk apparently makes the calcium less available for absorption through the intestines.

Further evidence for the theory that calcium and phosphorus are involved in leg cramps came from blood tests on women who had such cramps. When the patients stopped drinking milk and took Creamalin, a medicine containing aluminum hydroxide, with each meal for five days, the calcium in the blood increased, the phosphorus decreased and the leg cramps were relieved.

The aluminum hydroxide preparation was used to remove from the intestinal tract the phosphorus from foods, thus preventing its getting into the blood stream and causing leg cramps. This treatment was used, rather than cutting down on phosphorus rich foods, because phosphorus-rich foods are the protein foods. Reducing the protein in the diet of pregnant women would not be good. For the same reason, Dr. Page advises only a "moderate" reduction of milk.

Science News Letter, June 21, 1952

ENGINEERING

Magnetic Switch Gives Fast Telephone Circuit Selection

➤ A MAGNETIC switch has been developed by Bell Telephone Laboratories which can select the proper telephone circuit and hook into it in less than three-thousandths of a second while a person dials a number.

Called relays, the switches are more easily manufactured and adjusted than the ones they are designed to replace. They also have higher operating efficiencies, longer life, and require less power to operate.

In announcing the new development, the Bell research organization pointed out that the switch has a life expectancy of one billion operations, equivalent to one switching movement every second for more than 30 years.

Limited production of the switches is scheduled for the next 18 months while local telephone companies try out the new devices.

Science News Letter, June 21, 1952

ENDOCRINOLOGY

Cortisone Helps Childless Women Have Desired Babies

➤ CORTISONE, FAMOUS as an arthritis remedy, has helped some childless women have the babies they longed for, Drs. G. E. Seegar Jones, J. E. Howard and H. Langford of Baltimore reported at a meeting in Chicago of the Endocrine Society.

These women were of the bearded-lady type although they were not conspicuously masculine. Apparently their hairiness and failure of normal ovarian function resulted from underfunctioning of part of their adrenal glands. Doses of cortisone, one of the adrenal gland hormones, supplied the deficiency and resulted in normal female gland functioning and pregnancy in some cases.

Patients whose ovaries were not functioning normally but who were not bearded were not helped by cortisone.

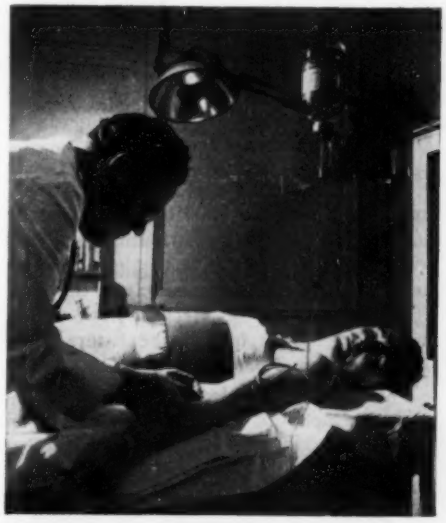
Irradiation to the pituitary gland in the head and the ovaries was the most effective treatment for women whose involuntary sterility was due to failure of their ovaries to form and release egg cells, Dr. Samuel L. Siegler of Brooklyn, N. Y., reported.

This condition was diagnosed in about six out of every 100 of the nearly 1,000 patients he examined. Of the 55 treated with hormones, irradiation and surgery, according to which seemed needed, 44 developed regular cycles of egg formation and release, 26 became pregnant once, one patient was pregnant twice, four patients miscarried at two to four months and 23 had normal babies.

The "thyroid myth" in connection with sterility was debunked by Dr. Edward T. Tyler of Los Angeles.

The thyroid gland extract is probably the most commonly used hormone in the treatment of sterility and many physicians use it almost routinely for this purpose. In spite of this, the statistical evidence in favor of it is not "too impressive," Dr. Tyler declared. In his opinion it should be used only when there is definite evidence of underfunctioning thyroid gland.

Science News Letter, June 21, 1952



SYNTHETIC BLOOD EXTENDER —PVP-Macrose, a liquid having many of the desired properties of whole blood and plasma, is administered to patients just like a blood transfusion. The substance requires no refrigeration, and could be used in case of an atomic attack on the United States or for other mass emergency treatments.

BIOLOGY

Sewage "Farms" Yield Food

Problem of mounting waste disposal and of producing high protein food could be solved by putting sewage into an oxidation pond with algae.

➤ SEWAGE "FARMS" which will greatly simplify the mounting problem of waste disposal and at the same time produce high protein food and industrial raw materials are suggested by research at the University of California.

Scientists on a sanitary engineering project have completed a laboratory study, with encouraging results, and are now building a pilot model pond for further tests.

The basic idea is to put sewage into an oxidation pond along with algae, single-celled aquatic plants. The algae grow well in such a media, and they produce oxygen which could be used to treat the sewage.

At the present time a large part of the cost of sewage treatment lies in the expensive pumps and other installations needed to supply oxygen.

The scientists have found that, within limits, the faster sewage is put through their experimental apparatus, the faster algae grow. The faster they grow the more oxgen they produce; and the more oxygen, the faster the sewage is treated.

Under controlled conditions they have converted sewage almost completely into algae in one day, in comparison to about 25 days for sewage processing in existing pond operations.

Algae, which contain up to 50% protein, are currently hailed as a promising source of food and industrial raw materials.

The Berkeley scientists feel that for psychological reasons sewage-grown algae would not ever be used for human consumption. Nevertheless, in the process of drying the algae, harmful bacteria would be largely eliminated. While the dried algae probably could be fed to cattle, chickens and hogs, the scientists say that inexpensive pasteurization should be applied as an added health measure.

With such a source of food for domestic animals, a great deal of the acreage now devoted to growing fodder could be used to produce food for human consumption.

Moreover, the algae crops could provide chemicals, fats, alcohol, oils for paints and varnishes, synthetic fibers, and basic materials for hormones and drugs.

The proposed sewage "farms" offer spectacular possibilities. The engineers say that 1,000 to 1,500 pounds of dry algae could be produced per million gallons of sewage per day. In the San Francisco Bay area alone some 200 to 250 million gallons of sewage are produced every day. Thus sewage "farms" could be an important source of raw materials.

Some 500 tons of algae could be grown in the same area as 30 tons of soybeans, which is probably the most productive agricultural crop known. Moreover, algae grow continuously and are harvested daily.

The method would get around one of the big stumbling blocks encountered by other experiments in growing algae for food. In artificial cultures, nitrogen and other expensive nutrients must be added, which increase the cost beyond practical limits.

Such additions would not be needed in sewage "farms" because all growth elements are present in the sewage or richly provided by bacterial action in the sewage. These nutritional requirements are nitrogen, phosphorus, carbon dioxide and minor nutrients.

Such "farms" would also conserve valuable nutrient elements now being poured into the sea in huge quantity. Algae, in growing, reclaim the nitrogen and other valuable elements that are otherwise lost.

The investigation was originated by Harvey F. Ludwig, now an officer of the U. S. Public Health Service. William J. Oswald, research engineer, supervises the project under the faculty direction of Prof. Harold B. Gotaas, chairman of the division of civil engineering and irrigation in the University.

Science News Letter, June 21, 1952

ENGINEERING

Scientists Study Pipes Without Digging Ditches

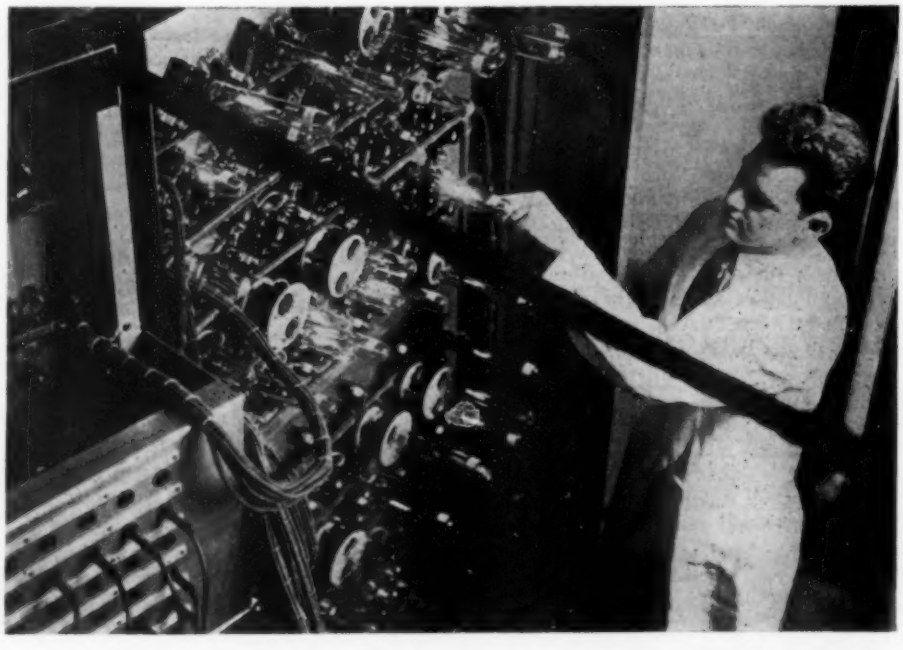
➤ SCIENTISTS AT the Midwest Research Institute, Kansas City, Mo., can know the flow inside city water-distribution pipelines without having to dig a single ditch. Instead of working on actual pipes, they use a complex maze of electric light bulbs, wires and meters to feel the future pulse of underground networks.

The complicated electric device is called a pipeline-network analyzer. Its secret is an array of special light bulbs that represent different pipe lengths, diameters and roughnesses. When a problem is being worked, the brighter a bulb glows, the greater is the pressure drop in the pipe it represents.

The instruments can be set up to imitate flows and pressure drops for networks that have as many as 104 different pipelines. Pressure drops between any two points can be determined by a single measurement.

In addition to water-distribution systems, the experts can use the device to study natural gas lines, steam-heating networks, oil pipelines and even air-conditioning systems.

Science News Letter, June 21, 1952



ELECTRICITY MEASURES PRESSURE—A bird's-eye view of a pipeline network analyzer that can predict how yet-to-be-built pipeline systems will work. The light bulbs have special filaments that glow more brilliantly as the pressure loss increases in the pipes they represent.

MEDICINE

Cortisone Helps Hearts

➤ HEART DISEASE, adhesions and one kind of baldness are the latest conditions for which cortisone may be good medicine.

These new uses for the famous arthritis remedy were announced in Chicago at a meeting of the American Medical Association. They come on the heels of an announcement by one manufacturer, the Upjohn Company, Kalamazoo, Mich., that microorganisms can be used to produce the chemical from such readily available substances as yeast, Mexican yams and soybean by-products.

Because this method does in one step what formerly took a complex and costly series of chemical processes, the price of the drug could be cut 20% below the prevailing price. The manufacturing method is a mold fermentation process similar to that used for production of penicillin.

The kind of baldness which can be helped by cortisone is called alopecia areata. It is not the common type that afflicts middle-aged men. Women as well as men get this sometimes patchy, sometimes complete baldness.

The fact that women with this kind of baldness sometimes grow hair on their heads while pregnant led Drs. Calvin J. Dillaha, Stephen Rothman and Stanley M. Mesirow of the University of Chicago Department of Medicine to try cortisone. The fact that arthritis improves temporarily in pregnancy was one observation which years ago led Dr. Philip Hench, co-discoverer of cortisone, to look for and try as soon as available this adrenal gland hormone in arthritis.

Of the 22 patients with baldness given cortisone, 16 got regrowth of hair. In most cases this began within a month after cortisone was started. In most of the patients, the regrowth was patchy but in some a satisfactory cosmetic result was obtained.

Possible use of cortisone for adhesions and for one kind of heart trouble, myocardial infarction, appears likely on the basis of research on animals reported by Drs. Schayel R. Scheinberg, Aran Johnson, Robert A. Gerisch and Harry C. Saltzstein of Harper Hospital, Detroit.

Myocardial infarction is a condition in which bits of the heart muscle die because of stoppage of a blood vessel nourishing that part of the heart. The dead bit of heart muscle is called an infarct. Cortisone reduced the average size of infarcts by 80% to 85% in dogs, the Detroit doctors report.

Adhesions in the abdomen and chest were reduced 75% to 80% by cortisone treatment, these doctors found.

Science News Letter, June 21, 1952

MEDICINE

Tube Unstops Intestines

➤ A METAL-TIPPED tube and a magnet are being developed into a life-saving surgical gadget that was shown for the first time at a meeting in Chicago of the American Medical Association.

The surgeon-inventor, Dr. John W. Devine, Jr., of Lynchburg, Va., got the idea for it from reading a popular account of a magnet five inches high that could lift a motor boat out of the water.

Dr. Devine and the chief engineer of the Indiana Steel Company have adapted this idea to a magnet that will help surgeons guide a tube down the throat, through the stomach, around the sharp bend from the stomach into the intestines and on through the many loops and curves of the intestines themselves.

Such tubes which can suck out fluids from the intestines sometimes prove life-saving in patients suffering from intestinal obstruction due to disease or after operations.

Guiding such a tube around the many curves has always been a difficult procedure. With the new device, a tiny piece of metal is at the end of the tube. The "Alnico-5" magnet, of aluminum, nickel and cobalt, is held over the patient's abdomen.

By watching through the fluoroscope the metal end of the tube the patient has swallowed, and by moving the magnet, the surgeon can guide the tube around the curves through the intestines.

A French surgeon 40 years ago had the idea of using a magnet for this purpose. But the magnet built for him was made the size of a piano in the hope of making it strong enough. It consequently proved impractical. Engineers now know that it is distance rather than size that gives a modern magnet its power.

The tube itself has some new features designed by Dr. Devine. Tubes formerly used, even when they could be gotten into the intestines successfully through the mouth and stomach, often sucked the wall of the intestine against the opening of the tube. This blocked the tube and made it ineffective and further endangered the already sick patient.

To get around this, Dr. Devine puts a tube within a tube. The inner tube acts as an air vent so that the suction built up pulls air rather than intestinal wall into the holes of the outer tube. Suction of fluid and gas thus continues effectively.

Science News Letter, June 21, 1952

● RADIO

Saturday, June 21, 1952, 3:15-3:30 p.m. EDT

"Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. Leon A. Hausman, professor of zoology at the New Jersey College for Women, Rutgers University, New Brunswick, N. J., discusses "A Scientific Look at Hair."

MEDICINE

Lewisite Antidote Treats Chrome Dermatitis

➤ BAL, A CHEMICAL developed by the British during the war as an antidote to lewisite gas poisoning, is helping patients with chronic chrome dermatitis, Dr. Harold N. Cole, Jr., of Western Reserve University School of Medicine, Cleveland, reported at a meeting in Chicago of the American Medical Association.

This skin disease afflicts lithographers and diesel mechanics as well as workers in the chromium plating industry. The diesel mechanics get the chemical on them because sodium bichromate is used to prevent corrosion in diesel engines and no satisfactory substitute has been found for it.

The skin irritation can be disabling.

Dr. Cole used BAL in a paste or ointment as daily treatment for seven chrome dermatitis patients who had had their skin trouble from one to 13 years. Two workers with mild cases who changed their work were completely cured in two months. Another, who did not change his work, was 75% improved after two months.

Two patients with severe attacks were put in the hospital for two weeks. Daily treatment with the BAL paste completely cleared their skins in that time. The trouble flared up again when they went to work, but BAL gave them 75% improvement, as well as another patient with a severe case.

The seventh patient, also a severe case, could not take the treatment because he developed a skin sensitivity to BAL.

Science News Letter, June 21, 1952

ENGINEERING

Four-Mile-Long Bay Bridge Spans Waist of Chesapeake

See Front Cover

➤ A FOUR-MILE-LONG bridge spanning the waist of Chesapeake Bay now is nearing completion. It is believed to be the longest continuous steel structure over water in the world.

Currently being paved, the $44,000,000 structure of steel and concrete joins Sandy Point, near Annapolis, Md., to the eastern shore. Including approaches, the construction project sprawls 7.7 miles.

Science News Letter, June 21, 1952

MEDICINE

Drug Prevents Recurrences Of Acute Rheumatic Fever

➤ EVEN IF ACTH and cortisone prove disappointing as medicines for acute rheumatic fever, a new medicine that may prevent recurrences of the disease after the first attack is now available.

This medicine is a new form of penicillin. Its scientific name is N,N'-dibenzylethylenediamine Dipenicillin G. The trade name given it by Wyeth Incorporated, who make it, is Bicillin. It is given by injection into the muscles and because it is the repository type of penicillin, remaining in the blood stream as long as a month after a single injection, it need only be given once a week or once in two weeks.

It banished Group A streptococcus germs from the throats of 12 out of 13 children who had been carrying these germs in their throats, Drs. Gene H. Stollerman and Jerome H. Rusoff of Irvington House, Irvington, N. Y., reported at a meeting of the American Rheumatism Association in Chicago.

Acute streptococcus throat infections precede attacks of rheumatic fever. Because each attack of this disease may damage the heart, doctors try to prevent further attacks after the first one. The new penicillin was given to 138 children from six to 14 years old convalescing at Irvington House from rheumatic fever. All but one of them remained free of streptococci as shown by weekly throat cultures for the 10-month period of the study. None of the treated group had a recurrence of rheumatic fever.

Science News Letter, June 21, 1952

MEDICINE

Radioactive Iodine May Give Heart Patients Longer Lives

➤ HOPE THAT radioactive iodine treatment may lengthen the lives of heart disease patients appeared in a report by Drs. Henry L. Jaffe, Maurice H. Rosenfeld, Frederick W. Pobirs and Laurence J. Stuppy of the Cedars of Lebanon Hospital, Los Angeles, at a meeting of the American Medical Association in Chicago.

They gave this treatment to 100 patients who were chronically ill and seriously incapacitated by one or another form of heart disease. The theory behind the treatment is that by reducing activity of the thyroid gland the total metabolism of the body will be lowered and the body's requirements can be reduced to within the limit of the heart reserve.

Of the 100 patients treated two years ago, 53 got good results as shown by relief of symptoms and reduced need for drugs such as nitroglycerin or mercurials. Fair results were obtained in 20 and poor results in 27 including 24 who died during the two-year period since the treatment. None of the deaths was attributable to the radioactive iodine treatment.

The physicians' impression was that the average life expectancy for the entire group may have been increased as a result of the treatments. However, they also pointed out that a longer period of observation of a larger number of patients is necessary before this can be established.

They stressed that since this is a rather formidable treatment, it should be limited to those severe cardiac patients who have failed to respond to all other types of medical management.

The radioactive iodine, produced in the Oak Ridge Laboratories of the Atomic Energy Commission, was given as a drink in distilled water once a week for five weeks.

Science News Letter, June 21, 1952

ENGINEERING

Improved Microtome Mounts Tissue Slices Automatically

➤ DR. VANNEVAR BUSH, president of the Carnegie Institution of Washington and head of U. S. wartime scientific research, has turned his talents to improving a machine used in every hospital laboratory that does cancer diagnostic work as well as in countless medical research laboratories.

The machine is a microtome for slicing bits of body tissue thinner than most tissue paper so that the cells of these tissues can be examined under the microscope.

Ordinary microtomes look, roughly, like the machines butchers use to slice ham or other meat. They are hand operated and the very tedious job of putting the superthin, fragile slices onto a glass microscope slide is also done by hand.

Dr. Bush's machine, announced in the journal SCIENCE (June 13), does the whole thing automatically. The bit of tissue from operating room, autopsy room or research laboratory is, as usual, put into liquid paraffin. When this has hardened it is ready for the microtome. But with Dr. Bush's automatic machine, moving picture film is pressed onto the block and the slices, or sections as they are called, of tissue come off mounted on the movie film.

Besides the time and trouble saved by the new machine, there is the further advantage that the sections are accurately and automatically registered. If a dozen sections of tissue are wanted, for example, there can be no doubt about the order in which they come. For research and sometimes diagnostic work, this is important.

The first model of the machine was built by W. R. Horsfield, now of Bermuda. Working with Dr. Bush in its development were also Osborne O. Heard of the Carnegie Institution's department of embryology in Baltimore and W. F. Steiner and L. A. Horton of the Institution's department of terrestrial magnetism.

Science News Letter, June 21, 1952

IN SCIENCE

ECOLOGY

Scientists to Study Life In Pacific Archipelago

➤ A SEVEN-MAN scientific research team has left Honolulu for the Tuamotus Archipelago where it will spend about three months studying the inter-relationship of environment and animal and plant life of the Raroia atoll.

Now in its third year, the ecological project is sponsored by the Pacific Science Board of the National Academy of Sciences-National Research Council with financial aid from the Office of Naval Research. The group is being led by Dr. Norman D. Newell, geologist and curator of the geology branch of the American Museum of Natural History. He is assisted by J. V. Byrne of Columbia University.

The men will study the problems affecting the economy of the atoll's population of 300. In addition, they will gather specimens for the U. S. National Museum, the American Museum of Natural History, the Bishop Museum in Honolulu, the Academy of Natural Sciences in Philadelphia and the California Academy of Sciences.

Science News Letter, June 21, 1952

MEDICINE

Continuous Pain Relief By Tube Near Spine

➤ CONTINUOUS RELIEF of severe pain without having shots in the arm or nerves every three or four hours is possible by a method reported by Drs. Albert M. Betcher, George Bean and Daniel F. Casten of the Hospital for Joint Diseases, New York, at a meeting in Chicago of the American Medical Association.

They insert a narrow rubber tube, called a catheter, into the back near the spinal column and fix it to the skin with adhesive tape. Procaine, an anesthetic, is injected into the tube and allowed to infiltrate the chain of sympathetic nerves which originate in the spinal cord. These nerves have, among other functions, the transmission of pain impulses.

The anesthetic is injected through the catheter every four hours. The catheters can be left in place for days or weeks and the patient can be up and about. Injections can be given by a nurse.

Permanent denervation, to stop the pain, is best done by an operation in which the nerve is cut, the doctors said. But for many cases the temporary blocking of the nerve is sufficient.

Science News Letter, June 21, 1952

NCE FIELDS

AERONAUTICS

Improved Radio Aids To Land Pilots Soon

➤ IMPROVED RADIO-BEAM landing aids, a few of them installed already, will provide pilots with a better radio highway to their landing strips in about 18 months, the Civil Aeronautics Administration has predicted.

The dual-unit landings aids will replace war-surplus single units now used in about 100 locations. They also are to be installed at 75 fields now scheduled to get the Instrument Landing System.

The range of the new very-high-frequency radio units has been increased from 10 to 30 miles. Also, they yield more precise on- and off-course pilot guidance. The war-surplus units often are affected by snow or changes in the level of the water table, but the new ones overcome these difficulties.

The CAA said the new landing aids would be installed as quickly as they could be obtained, but described the electronics delivery picture as "utterly fantastic," due to military requirements for electronic gear. About 18 months will be required to get all the new units installed.

Costing $7,500 each, the units continuously will send two radio signals to pilots. As in the present system, one of the beams gives right and left guidance. The other tells him the angle at which he should fly down to the field.

A monitor, not used with present landing aids, will ring bells and flash lights in the control tower the instant something goes haywire with the landing signals being transmitted to the pilot. The control tower then will switch over to the stand-by transmitter until the trouble is fixed.

Science News Letter, June 21, 1952

NUTRITION

Do Not Blame Hen For Poor Summer Eggs

➤ DO NOT BLAME the hen for poor quality of eggs in summer. "Hot weather eggs" with thin whites and flat, weak yolks owe their poor quality to poor handling.

When laid, eggs have plenty of fine quality for both nourishment and appetite appeal. But to conserve this quality, eggs must be given cool, careful handling all the way from the nest to the breakfast table, U. S. Department of Agriculture specialists point out.

"Be wary," they advise, "of buying eggs from counter displays or cartons stacked in grocery aisles instead of from clean cold refrigerators. Every hour that eggs are left at high temperatures such as 80 to 90 degrees Fahrenheit, not unusual in many stores and kitchens in summer, they drop rapidly in quality.

"Eggs left for a few days at temperatures between 70 and 80 degrees Fahrenheit may lose as much freshness as eggs kept several weeks covered in the refrigerator. The best temperature for holding eggs is above freezing but not higher than 45 degrees Fahrenheit."

Farmers need to gather eggs from nests at least three times a day in hot weather and then cool them promptly in well-ventilated containers. Next, wholesalers and retailers need to give them cool care, away from odors that may penetrate the porous shells and affect egg flavor. Grocers, delivery men, and house-to-house vendors need to keep eggs cool at all times.

Finally, the housewife must remember to put the eggs in the refrigerator as soon as she gets them home from the store.

Science News Letter, June 21, 1952

CHEMISTRY

Strange Synthetics Made In Eastman's "DPI" Labs

➤ STRANGE SYNTHETIC organic chemicals with names of the tongue-twisting variety are being made in Rochester, N. Y., at Eastman's Distillation Products Industries laboratories out of such strange raw materials as lobster shells and bovine gallstones.

The relatively scarce chemicals are supplied to scientists throughout the world at prices that range up to $60,000 a pound.

Chitin, a basic raw material for an important compound used in nutrition research, is extracted from lobster shells. Bilirubin has a bright red color useful to medical scientists testing human body functions. It is made from gallstones taken from cattle. Since all cattle do not have gallstones, bilirubin is comparatively scarce.

Farmers like butylmercaptan for its horrible, skunk-like odor. Some farmers used it to drive rats out of their grain storage bins. But the rats fled to grain bins on neighboring farms and the resulting situation created harsh feelings.

Ethylmercaptan smells worse than rotten eggs. The chemical is useful as a sort of olfactory alarm signal in mines when the noise of mining machinery would make warning sirens or bells difficult to hear.

Although the names of the chemicals may sound like they come from a different planet, DPI scientists explained that its name gives research workers an exact picture of a chemical's structure and also it suggests many of the chemical's uses.

Eastman began the DPI laboratories in 1919 when World War I cut off America's chemical trade with Germany, the world's top producer of synthetic chemicals at that time.

Science News Letter, June 21, 1952

MEDICINE

New Penicillin Attracted to Ill Lungs

➤ PATIENTS WITH lung infections such as pneumonia and bronchitis should be particularly helped by a new kind of penicillin reported by Dr. J. Ungar and P. W. Muggleton of Glaxo Laboratories Ltd., at Greenford, Middlesex, England.

This new pencillin preparation accumulates particularly in lung tissue, and most particularly in inflamed lung tissue, such as that of patients with bronchitis and the like. The advantage of this is that it brings more of the drug to the place where it is needed, where the germs are. The germs would be stopped more quickly and the patient would not need to have injections of the medicine so often.

For several years scientists have been trying to find a form of penicillin that would stay in the body longer, so the patient would not need to get a "shot" every two or three or four hours. The new penicillin developed from studies with this end in view. The fact that a kind of penicillin would accumulate particularly in one kind of body tissue was an unexpected find.

This particular kind of penicillin that goes especially to inflamed lungs is diethylaminoethylbenzyl-penicillinate hydriodide. It has been given the short name estopen.

The hope now is that other penicillin preparations may be made to select other kinds of body tissue for accumulation, thus providing penicillins specially tailored for different parts of the body.

Details of the study of the one that accumulates in lungs are reported in the BRITISH MEDICAL JOURNAL (June 7).

Science News Letter, June 21, 1952

ELECTRONICS

MANIAC Computer Unveiled in Los Alamos

➤ AN ELECTRONIC digital computer, called "MANIAC," has just been unveiled at the Los Alamos Scientific Laboratory of the University of California.

The MANIAC is able to do in one and a half hours a complicated mathematical problem which took one of its predecessors, the ENIAC, 24 hours to do and which would take one person with an adding machine 24 months to complete. On top of that, it is much smaller in physical bulk than is the ENIAC. The MANIAC is able to do its job with only 3,000 electronic tubes while the ENIAC uses 18,000.

The new calculator will be used to make computations for the Atomic Energy Commission. The machine's builders at Los Alamos have provided the words, Mathematical Analyzer, Numerical Integrator and Computer, to go with the initials MANIAC and to describe the new computer.

Science News Letter, June 21, 1952

ENGINEERING

Conveyor Belt Cartage

Conveyor belts, up to ten miles in length, are providing the cheapest form of transportation of earth, coal and ore. They can deliver 600 tons of coal an hour.

By A. C. MONAHAN

➤ THE ENDLESS conveyor belt as a cargo carrier is not new, but improved belting and installation equipment of the past decade is bringing it into wider use.

It is now being successfully used in transporting earth, crushed rock, coal and similar materials over distances as great as ten miles.

These "long-haul" conveyor belts are in competition with roadway trucks and what railroads regard as short hauls. But they are doing the jobs with a high degree of efficiency and at a lower cost than other carriers.

Longer belt lines may be expected. One which has been proposed would carry iron ore and coal more than 100 miles. Another belt to carry subway passengers on a shuttle route in New York City has been suggested.

Used for Mining

The principal uses for which long-haul conveyor belts have been employed up to the present are in coal and ore mining and the removal of earth materials from one site to another. In building the Shasta Dam in California, some 12,000,000 tons of sand and gravel for masonry construction were transported nearly ten miles from pit to dam site over country too rough for economical cartage by rail or highway.

This belt, traveling like others over rollers in a supporting framework, followed the direct route from the pit to the site of the dam. It traveled up and down heavy mountain grades, crossed highways and railroads on steel trestles, and dumped at its terminal each hour about as much material as 600 five-ton trucks could have delivered in the same length of time.

The belt used on the Shasta Dam project was a rubber-covered cotton conveyor. Actually a series of belts were used, one dumping its load into the next. This is necessary because of the mechanical difficulties of operating a single long belt.

Rubber-coated cotton belting, unless of impractical thickness, is not strong enough in great lengths to withstand, when loaded, the "pull" of the powered head and tail pulleys at the ends.

For more permanent installations, belts with steel cable interwoven in them are available. These have far greater strength and permit the use of longer belts. But they are far more costly than the rubber-coated cotton type. To help the latter, intermediate rollers are sometimes powered. Such rollers are equipped with vacuum cups to give a pulling grip on the loaded belt passing over them.

Rollers for belts on which loose material is carried, such as earth and coal, are built with a spool-shape so that they turn up the edges of the belt to keep the contents from spilling from the sides. The rollers may be made up of a number of wheels on the same axle, and in certain cases rubber-tired wheels are used.

A belt one yard wide carries about a ton of coal on each 45 feet of length, or two tons of crushed rock on the same length. Traveling at a rate of 450 feet a minute such a belt could deliver 600 tons of coal an hour, or about 14,400 tons in a 24-hour day.

The cost of belting and its installation for long hauls is high, but the cost of maintenance and operation is low. Where a considerable amount of material is to be moved, belt transportation is claimed to be the lowest costing method now in use. Also belts are transferable, and when one job is completed they can be used on another.

Part of the belt used on the Shasta Dam project later carried fill to the Anderson Dam in Idaho. There it moved more than 8,000,000 tons of clay two miles to form the core of the world's highest earthen dam. This Goodyear cotton-rubber conveyor was still in good condition.

One great advantage of belt conveyors is that they are suitable in rough country where other forms of transportation would be difficult. They can run up and down grades of at least 30 per cent, many times greater than can be used by trucks or ordinary railways. They can cross chasms, rivers, highways and railroads on relatively inexpensive narrow bridges because their loaded weight per linear foot is low. Where tunneling is used to avoid crossing high ridges, only a relatively small bore tunnel is necessary.

Help Develop Power

Another advantage is that loaded belts passing down steep grades can operate regenerative motors to develop power for other parts of the line, or for other purposes. On the Anderson Dam job, for instance, the downhill runs of loaded lines kept the belt running and also furnished electric power to light night-time work and power electric shovels.

In the development of satisfactory steel cable conveyor belts, much research work

TRANSPORTING CLAY—This conveyor belt, used to carry clay two miles from the pit to the Anderson Dam in Idaho, was installed with a cover to protect the clay en route from sun and rain.

was required. The steel must not only have strength and long life, but also be extremely flexible so that it passes easily over the head and tail pulleys. The cables now used are of the finely-stranded airplane type. They are sometimes plated with brass to provide a clinging surface for the rubber covering.

Predict Wider Use

Conveyor belts are now widely used in coal mining and even wider use is predicted for the future. Feeder belts carry the coal from working faces to a central belt. This brings the coal to the foot of a sloping belt that extends up a tunnel to the surface.

The coal comes to the surface in a constant stream. Operation of the belt system is claimed to be cheaper than by underground railway cars drawn by special locomotives and to be less hazardous than other forms of transportation.

What the future has in store for belt conveyors can not be predicted, but several projects have been proposed. A 100-mile belt in Ohio, that would extend from Lorain on Lake Erie to a point on the Ohio River, has been suggested. It would haul iron ore unloaded from boats on the Great Lakes to inland smelters. It would also bring coal from Ohio mines to the Lake Erie port for local use or for shipment by the iron-ore vessels to distant ports on the Lakes. It would mean cheaper transportation than now is provided by railroads.

Whether or not this 100-mile conveyor belt will be constructed remains a question. The railroads with which it would compete are reported to be fighting it. They are said to be afraid of the lower transportation costs that the belt would provide.

On the whole, railroads need not fear competition from belt conveyors. The latter type of cargo carrier is not suitable for general merchandise since each conveyor must be built for a particular product. In the Ohio case, the proposed belt would carry only ore and coal, the same belt carrying both these products.

Shuttle Train Replacement

Another novel proposal for a conveyor belt is in New York City to replace the present subway shuttle trains that transfer passengers between Grand Central Station and Times Square. This shuttle replacement plan, engineered by Goodyear Tire and Rubber Company and the Stephens-Adamson Engineering Company and already submitted to the New York Board of Transportation, would provide small, closely spaced passenger cars riding on an endless track of rubber conveyor belts and rubber-tired banks of accelerator wheels.

At the ends of the route, where the cars pass around a circular terminal, there would be moving platforms for loading and unloading. Passengers would step from moving cars or platforms onto these platforms. The small cars, with seats, would pass around the circular terminal at the same rate of speed as the moving platform.

After loading and passing beyond the loading platform, the cars would move over pneumatic tire wheels to speed them up and carry them onto another conveyor belt of higher speed for the cross-town trip.

The moving platforms at the terminals would travel at a speed of about one and one-half miles per hour, half the usual pedestrian pace. Between loading points the cars would travel at 15 miles an hour. The cars would be turned around at either end on rollers by a large wheel and return in the opposite direction on the endless track.

Advantages claimed for this proposed conveyor-belt transportation system are its ability to relieve rush hour congestion by the peak load capacity of 32,000 passengers per hour in each direction and its speed in delivering passengers from platform to platform in two minutes, compared with the three minutes now required by shuttle trains. Operating costs of the new system would be less than one-half the present operating costs of the shuttle at peak load, the designers estimate.

Science News Letter, June 21, 1952

PSYCHIATRY

Treat Patients as Persons

➤ IN THE future, your doctor may be equipped to give more attention to your feelings, fears and personal problems as well as to your aches and pains. He will treat you as a person, not an assembly of symptoms. He will, that is, if recommendations contained in a report issued in Washington by the American Psychiatric Association are followed out.

A major difficulty with modern medical education, the report points out, is a tendency to teach that man can be understood exclusively through an unfolding of his inherited biological endowment in a given physical setting. This viewpoint fails to take into account human personality and the influence of interpersonal and cultural factors on personality development and physiological functions.

Today, undergraduate medical students in leading medical schools receive training in the principles of psychiatry. That is a step in the right direction, the report indicates. But the student needs more than that. He needs to have a much broader concept of human biology so that he will be able to use his training effectively in dealing with patients as persons.

The report criticizes medical schools for admission policies that make restrictions in regard to geography, sex, race or religion because they "may result in the exclusion of students who later on, as physicians, will be best able to serve the community."

The report makes public the proceedings of a closed conference of the American Psychiatric Association and the Association of American Medical Colleges held last year.

Science News Letter, June 21, 1952

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To People who want to write
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DO YOU have that constant urge to write but fear that a beginner hasn't a chance? Here is what the former editor of Liberty said:— "There is more room for newcomers in writing than ever before. Some of the greatest of writing men and women have passed from the scene in recent years. Who will take their places? Fame, riches and the happiness of achievement await the new men and women of power."

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PHYSICS

Suggest Name "Aeropause" For Upper Atmosphere

➤ ON YOUR first trip to the moon, in order to get from the earth's atmosphere to free space, you may go through a region named the "aeropause," if two scientists have their way.

The scientists, who are intimately connected with research directed toward space travel, would call the region between about 12½ miles and 125 miles up, the "aeropause" to get rid of the present confusion about what to call this area. They are Drs. Konrad J. K. Buettner and Heinz Haber of the department of engineering at the University of California at Los Angeles.

They point out that there is little agreement about just where the "upper atmosphere" begins and ends among the various kinds of scientists concerned about research in this region.

They define the aeropause as that region of the atmosphere where its various functions and uses for men and craft begin to cease and space-equivalent conditions are gradually approached. Such a term as "aeropause," they claim in SCIENCE (June 13), would be quite useful in modern aviation. It circumscribes the area characterized by certain factors of environment that are distinctly different from those found either in the area of conventional aviation or in outer space.

Science News Letter, June 21, 1952

INVENTION

Garage to Park Cars Automatically Patented

➤ A GARAGE which parks automobiles automatically has been invented by Herman J. Bargehr, Chicago. He received patent number 2,598,750.

In this garage cars are transferred to their parking areas on transfer cars which can move the automobile laterally as well as forward and backward. This makes unnecessary the use of wide aisles for backing and turning the vehicles.

Science News Letter, June 21, 1952

HOUSES OF EARTH

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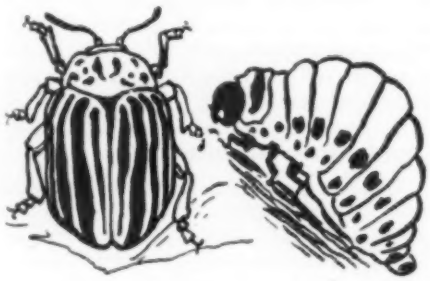
ENTOMOLOGY

NATURE RAMBLINGS



Feeding the Enemy

➤ INSECTS, it is often asserted and seldom denied, may eventually become one of the inheritors of the earth, by literally eating man out of house and home.

There is no doubt that they are formidable, feeding as they do on everything man produces and uses, from his crops and timber to his clothes and even himself, and serving as carriers of disease as a final lethal fillip.

One aspect of the situation, however, is rather frequently overlooked: Most of the really bad insect pests were set up in business by man himself. Under natural conditions, a potential crop plant and its potential devourer are often separated by thousands of miles; it is far-traveling civilized man who brings them together.

He also makes things all the easier for the pest by massing its chosen food plant in huge fields, and by devoting whole regions to the intensified production of one crop, like corn in the Midwest or cotton in the South.

As a typical instance, take a look at the striped potato beetle. It used to be a relatively insignificant insect, chewing the foliage of a few weed species related to the potato somewhere in the Southwest or in northern Mexico. When large-scale potato cultivation reached Colorado it got its real start. It traveled eastward from field to field and finally reached Europe as a stowaway in shipped potatoes.

The chinch bug, scourge of Midwestern grain fields in dry seasons, offers another case in point. It has always existed where it is now found, feeding undestructively on native grasses, but not until white men began planting hundred-acre grain fields, edge to edge, did it multiply into devastating hordes that sometimes destroy those fields in a single day.

Of course, man does not always bring the crop to the insect. Probably the more usual experience is for him to bring the insect to the crop. The very names of some of our most troublesome insects are monuments to this unhappy fact: Japanese beetles, Hessian fly, European corn-borer, Mexican bean beetle, Argentine ant, Oriental fruit moth—the list is a long one.

Whether man can exterminate the insects is still uncertain. But one thing is sure: if the insects succeed in exterminating man they will have destroyed their best provider.

Science News Letter, June 21, 1952

HOME ECONOMICS

Age Tags Useless

➤ MARKING CHILDREN'S clothing with size tags by age is useless.

This is the opinion of a majority of 2,266 typical mothers interviewed by the U. S. Department of Agriculture.

Three-fourths of the mothers in the United States with children 12 years old or younger buy most of their children's clothes ready-made. More than half of these said that they cannot tell how large a child the garment would fit by reading the size on the label.

Sizes, the mothers suggest, should be given in terms of the height and weight of the child the garment would fit. They also feel that it would be useful if manufacturers would get together and agree on what size garment should carry what label.

Boys have more trouble than girls in getting proper fit. The ready-made garments of three out of every ten boys need altering.

Mothers do read the labels on their children's clothes. Nine out of ten look for the size tag; those who do not, say it is because they are not reliable anyway. Nearly as many look for cleaning instructions and indication regarding shrinkage and fiber content.

Cotton is preferred for practically all children's garments from baby diapers to boys' school pants. Only for snowsuits and winter crib blankets is wool the best liked fiber.

Disposable diapers are not very popular with American mothers, the survey revealed. Only two out of ten have ever put them on their infants; one out of ten had never heard of them. A few thought they might be useful when traveling, but many seem to object to buying anything which is used only once and then thrown away.

In contrast, practically all mothers in rural sections and three-fourths of those in the city have heard of those gaily printed feed sacks for making garments. More than half had used them for their own children—generally for little girls' dresses.

Science News Letter, June 21, 1952

MEDICINE

Chemical Treats Keloids

➤ SUCCESS WITH a new treatment for ugly, often itchy and painful keloids was announced by Dr. Theodore Cornbleet of the University of Illinois College of Medicine at a meeting in Chicago of the American Medical Association.

Keloids are an abnormal growth of connective tissue. They often appear in scars from wounds and burns. Many atomic bomb victims of Hiroshima and Nagasaki developed keloids.

X-ray treatments, freezing with liquid nitrogen, and surgical removal followed by X-ray treatment are methods that have been used in the past to treat these stubborn growths. In many cases, "the cure is worse than the disease," Dr. Cornbleet said, pointing out that for that reason nothing may be done.

The successful treatment he reported was to inject the keloids with an enzyme chemical called hyaluronidase. This body chemical is also sometimes called the "spreading factor."

Dr. Cornbleet gave this treatment to 11 patients, nine of whom had old, hard keloids that had been present for several years. Two of the patients had many pea- and bean-sized keloids from previous acne. Two had the ordinary crab-like type across the chest. The rest had bulky keloids on their bellies, mostly the result of surgical operations.

The treatment was successful in all cases. Pain, tenderness and itching gradually waned and disappeared. The keloids softened and shrank to three-fourths or one-half their original height above the skin. The remaining excessive tissue wrinkled and was then cut away. None of the keloids returned after this treatment.

Hyaluronidase was successful, Dr. Cornbleet believes, because of its ability to soften the glue-like mass that holds cells together in body tissues.

This chemical is also proving useful in prevention of kidney stones, Drs. Arthur J. Butt and Joseph Q. Perry of Pensacola, Fla., Ernst A. Hauser of Cambridge, Mass., and Joseph Seifter of Philadelphia reported.

For this condition, patients get injections of the chemical every 24 to 48 hours. Its effect in preventing formation of sediment in the urine can be seen within 30 minutes. Formation of new kidneystones is halted and growth of existing ones is stopped.

Science News Letter, June 21, 1952

MEDICINE

First Allergy Tests

➤ MANY OF the basic facts about allergy and about immunity to diseases were discovered as a result of scientific interest stimulated by studies of jellyfish 50 years ago.

The golden anniversary of this work, the discovery of anaphylaxis by Drs. Ch. Richet and P. Portier, has just been celebrated.

It started when Dr. Richet was cruising in the Indian Ocean on the yacht of the Prince of Monaco, a famous naturalist. Dr. Richet, assisted by Dr. Portier, experimented with the poisonous, hive-producing principle of a stinging jellyfish, the Portuguese Man-of-War.

When he returned to France, he collected the hive-producing chemical of the stinging nettle, a form of sea anemone, and injected this into dogs. The first injection seemed harmless enough. But if a second injection was given several weeks later, the dog became acutely sick. Many animals thus treated died.

The first dose of the "stinging" principle primed the dog's system to make antibodies, some of which fastened to the tissue cells, sensitizing them to the "stinging" principle. With the very next injection of the "stinging" principle, called antigen, there was an antibody-antigen fight which eventually resulted in cellular damage and functional change in the sensitized tissues of the dog.

Dr. Richet's conception of this loss of natural immunity to the "stinging" principle which followed the first injection was called "anaphylaxis," meaning removal of protection, in contrast to "prophylaxis" meaning favoring protection.

Science News Letter, June 21, 1952

ICHTHYOLOGY

Tagged Sturgeon Migrates 200 Miles

➤ A LONG-DISTANCE travel record for the Pacific Northwest was hung up by a white sturgeon caught on hook and line in the Chehalis river.

The fish, released two and a half years ago in the Columbia River near the mouth of the Sandy River, swam 200 miles before being hooked. When tagged at the point of liberation the young sturgeon weighed six pounds. When caught it weighed eight pounds and was over four inches longer.

The Oregon fish commission has recovered 600 of 6,000 sturgeon tagged and released in the past 30 months. Only two others besides the record breaker have been recovered outside the Columbia River system. One of these migrated to Tillamook Bay and the other to Willapa Bay.

"We have been conducting the tagging experiments as part of a long-distance program to learn more about the migratory habits of sturgeon," said Arnie J. Suomela, state fisheries director. "The briny trek of the fish that met his death on the Chehalis is the longest we have noted. We do not know whether there are records elsewhere of any longer migration having been made."

Science News Letter, June 21, 1952

MEDICINE

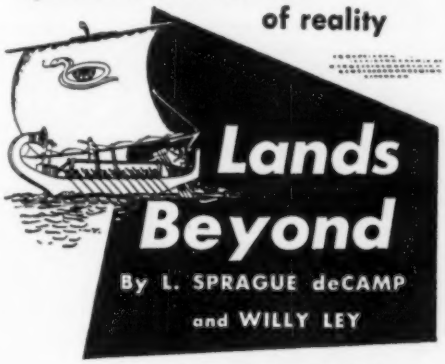
Banthine in Veins Relieves Kidney Pain

➤ PATIENTS WITH multiple sclerosis and others with acute kidney colic can be helped by a medicine now chiefly used for stomach ulcer patients. The medicine is banthine. Its use in these other conditions, and a warning against giving too much of it as an ulcer medicine to men with prostate gland trouble were reported by Drs. Jack Lapides and Austin I. Dodson of the University of Michigan, Ann Arbor, at the meeting of the American Medical Association in Chicago.

The excruciating pain of kidney colic can be relieved in three to five minutes by an injection of banthine into the veins. Multiple sclerosis patients can be relieved of one of their most distressing symptoms, failure of normal bladder function, by taking banthine in pill form.

Science News Letter, June 21, 1952

The latest discovery about the *terra incognita* just over the horizon of reality



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Books of the Week

For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N. W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

THE ADVANCEMENT OF SCIENCE, Vol. VIII, No. 32—*British Association for the Advancement of Science*, 95 p., illus., paper, six shillings. Articles of general interest in science.

ATOMIC POWER, AN ECONOMIC AND SOCIAL ANALYSIS: A Study in Industrial Location and Regional Economic Development—Walter Isard and Vincent Whitney—*Blakiston*, 235 p., $4.75. Providing and interpreting some of the data needed for intelligent consideration of the problem of international control, and evaluating the possibility for the use of atomic power in industry.

THE AUGER EFFECT AND OTHER RADIATIONLESS TRANSITIONS—E. H. S. Burhop—*Cambridge University Press*, 188 p., illus., $5.50. Interest in this subject has been renewed in connection with the study of artificial radioactivity and the possibility of the production of inner shell ionization by the process of K capture and the internal conversion of gamma radiation.

CAPITOL HILL: The Story of Congress—Desider Holisher and Graham Beckel—*Schuman*, 143 p., illus., $3.00. Telling in excellent photographs the activities of your senators and representatives and the art works and other interesting features of the capitol.

THE CHILD WHO IS HARD OF HEARING—Children's Bureau—*Govt. Printing Office*, 14 p., illus., paper, 5 cents. Advice to parents on how to prevent loss of hearing and how to help the child with hearing defects.

THE CHILD WITH EPILEPSY—Children's Bureau—*Govt. Printing Office*, 15 p., illus., paper, 5 cents. If seizures are controlled, the child with epilepsy can go to a regular school and take part in athletics.

THE COUNTER-REVOLUTION OF SCIENCE: Studies on the Abuse of Reason—F. A. Hayek—*Free Press*, 255 p., $4.00. A social sientist contrasts social control through collective action with the so-called "conscious" control by a super-mind.

THE EXPLORATION OF SPACE—Arthur C. Clarke—*Harper*, 199 p., illus., $3.50. Discussing the possibility, present or remote, of visiting the planets and even the stars, and what we would do or find out after a safe arrival.

FROST ACTION IN SOILS: A Symposium—K. B. Woods, Chairman—*Highway Research Board*, 385 p., illus., paper, $3.75. Of interest to highway engineers and others having to do with the maintenance of paving on airports and other areas.

A GUIDE TO THE HISTORY OF SCIENCE: A first Guide for the Study of the History of Science With Introductory Essays on Science and Tradition—George Sarton—*Chronica Botanica*, 316 p., illus., $7.50. The first part of this book is a series of lectures and the second is a select bibliography intended as a tool for students and historians.

HOW TO DESIGN AND INSTALL PLUMBING: Materials and Methods of Standard Practice—A. J. Matthias, Jr. Revised by Esles Smith, Sr.—*American Technical Society* 3d ed., 444 p., illus., $3.95. A book for plumbers and students of this trade. It presents standard practices that will enable the workman to operate in different jurisdictions.

INDUSTRIAL HYGIENE: New Information on the Physiological Effects of Trichloroethylene and Ethylene Dichloride Should Aid in Evaluating Associated Health Problems—H. H. Schrenk—*Mellon Institute*, 2 p., paper, free upon request to publisher, 4400 Fifth Ave., Pittsburgh 13, Pa.

INITIATION AND GROWTH OF EXPLOSION IN LIQUIDS AND SOLIDS—F. P. Bowder and A. D. Yoffe—*Cambridge University Press*, 104 p., illus., $4.50. Report of tests showing conditions for safe handling of explosives as well as what makes them go off.

INJURY OF THE XIPHOID—Michael Burman and Samuel E. Sinberg — *Columbia University Press*, 92 p., illus., $3.50. Such an injury may occur when a driver is thrown against the steering wheel in a collision, or when a boxer receives a solar-plexus blow. A book for doctors.

INVERTEBRATE FOSSILS—Raymond C. Moore, Cecil G. Lalicker and Alfred G. Fischer—*McGraw-Hill*, 766 p., illus.. $12.00. Prepared as a textbook, not a reference work, and designed for beginning students with no previous knowledge of zoology.

MARINE OILS: With Particular Reference to Those of Canada—B. E. Bailey, Ed.—*Fisheries Research Board of Canada*, 413 p., illus., paper, $3.00, cloth $4.00. Despite the increasing availability of synthetic vitamins, the natural vitamins continue to be of importance in medicine.

PLANTS AND THE ATMOSPHERE — Leonard K. Nash—*Harvard University Press*, 122 p., illus., paper, $1.50. Case 5 of the Harvard Case Histories in Experimental Science. To aid laymen and general students in the understanding of science through helping them take part in exciting moments of scientific history.

PUT DEMOCRACY TO WORK—Ruth H. Wagner and Ivah E. Green—*Schuman*, 132 p., illus., $3.00. Encouraging young people to have respect for other peoples, races and religions and to work together to achieve a domocratic way of life.

SALVAGING OLD PAVEMENTS BY RESURFACING—Robert H. Tittle, Chairman—*Highway Research Board*, 35 p., illus., paper, 60 cents. Lack of sufficient funds for new and reconstruction work has caused more and more states to resort to salvaging existing pavements.

SCIENCE AND THE LAND: 72d Annual Report, 1950-1951—New Jersey Agricultural Experiment Station—*Rutgers University*, 127 p., paper, free upon request to publisher, New Brunswick, N. J. Reporting results of the year's research.

TEXTBOOK OF ELECTROCHEMISTRY, Volume 1—G. Kortum and J. O'M. Bockris—*Elsevier*, 351 p., $7.00. An English translation of a German text published in 1947. The work has been revised and the bibliography now includes many English language works.

A TEXTBOOK OF ORTHOPEDICS: With a Section on Neurology in Orthopedics—M. Beckett Howorth and others—*Saunders*, 1110 p., illus., $16.00. A study of the diseases and abnormalities of the neuromusculoskeletal system with consideration of the patient as a whole, not just local condition.

Science News Letter, June 21, 1952

YOUR SKIN AND ITS CARE

By M. I. Dellman, M.D., and U. L. Levin, M.D.

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INVENTION

Patent Torpedo Computer And Marine Depth Finder

➤ A COMPUTER in a torpedo which figures out the course and speed of a target ship and corrects the torpedo's course to correspond has just been patented.

The "course interception navigational computer" receives information from the submarine at random intervals. It is designed to cooperate with equipment on the submarine, such as the periscope, radar, sonar, speedometer and compass. It includes a position keeper, which provides data with respect to the estimated position of the target.

A group of angle solvers continuously compute the proper angle of the torpedo gyroscopes on the basis of information obtained from the position keeper.

The computer was invented by William K. Ergen, Oak Ridge, Tenn., who assigned his patent, number 2,600,159, to the Radio Corporation of America.

A new depth finder which utilizes ultrasonic "noises," electronically controlled, also has been invented. Wayne M. Ross, Seattle, received patent number 2,599,586, and has assigned it to the Minneapolis-Honeywell Regulator Company.

This invention provides improved electronic circuits and circuit combinations which, according to Mr. Ross, simplify and lower the cost of depth finders. The depth finder works by directing recurring ultrasonic energy pulses toward the ocean bottom and then measuring the time it takes for the echo to get back. Knowing the velocity of sound in water, it is then easy to know how far down bottom is.

Science News Letter, June 21, 1952

MEDICINE

Vacation Heart Care

➤ TAKE CARE of your heart when you go on vacation or for a long week-end trip to the country. This warning applies especially to city people, desk workers and others who get very little exercise during the winter months and plan to crowd all their tennis playing and other athletic activities into the short vacation season.

Dr. Louis N. Katz, Chicago heart specialist and past president of the American Heart Association, gives this warning to vacation time and week end athletes:

"Your heart, like any other muscle, gets used to the amount of work expected of it daily. Professional athletes can run faster, swim farther, lift heavier weights, and play more rounds of golf than you can because their muscles, including their heart muscle, are trained to 'take it.'

"Almost everyone should take some form of mild exercise; but if you don't ordinarily lift anything heavier than the telephone, or walk farther than the distance from your house to the bus stop, then you should not expect your heart to take kindly to the sudden extra strain of a fast game of tennis.

"No one, if he wants them to last, uses his heart or his car to the very limit of their endurance. It is wise to hold some power in reserve."

Moderate, regular exercise never hurt any man, or woman, another past president of the American Heart Association, Dr. Tinsley R. Harrison of the Medical College of Alabama, at Birmingham, states. But many a person puts too much sudden strain on his heart even apart from vacation and week-end activities.

The chubby man running to make his train or bus in the morning or evening has at least two counts against him, Dr. Harrison points out. "His extra poundage is already putting a strain on his heart; and his frantic dash for the train is calling for all the effort his heart can muster—and maybe more," Dr. Harrison says.

"If his heart is not in perfect condition, sudden exercise like this could cause a heart attack because he may have a heart condition and not know it. Chubby can always catch another train, but he has only one heart—and he ought to take care of it."

Science News Letter, June 21, 1952

MEDICINE

Operation Stops Hiccups

➤ FIVE STEPS to try for stopping hiccups before taking the most radical but most effective one, a nerve crushing operation, were givn by Drs. Albert F. Gigot and Paul D. Flynn of the Lahey Clinic, Boston, at a meeting of the American Medical Association in Chicago:

The five steps are:

1. Finger pressure on the eyeballs through closed lids for several minutes, or forced vomiting.
2. Washing out of the stomach to remove any irritant.
3. Intravenous injection of atrophine.
4. Heavy sedation by administration of opiates or barbiturates.
5. Inhalation of carbon dioxide (a popular lay method is breathing in and out of a paper bag, or holding the breath).

Should these treatments fail, the next suggested remedy is the deadening of one or both phrenic nerves by drug injection in order to produce a diaphragmatic paralysis.

The phrenic nerves, of which there are two, regulate the sensation and motion of the diaphragm and the membranes containing the heart and lungs and lining the chest. If this fails to produce permanent relief, the final step is to crush one or both nerves by surgery.

"Clinical experience indicates that a left phrenic nerve crush will stop the majority of intractable hiccups," the doctors reported.

Science News Letter, June 21, 1952

ASTRONOMY

Few Large Sunspots Expected Within Next Five Years

➤ THERE WILL not be any giant spots on the sun within the next five years or so, if the computations of Dr. I. L. Thomsen of Carter Observatory, Wellington, New Zealand, are correct.

You may be able to see a few pock marks on the sun during the next few years, but none will be easily visible through heavily smoked glass. None will equal in size the giant spot of a year ago, for instance.

Dr. Thomsen's calculations are based on the fact that a period of few sunspots always follows a time of large and numerous spots. Such a cycle usually repeats itself every 11 years.

Giant spots disappear before the midtime from maximum to minimum of the sunspot cycle, Dr. Thomsen figures. They do not again appear until half-way between the times of minimum and maximum on the upward part of the cycle, he reports.

Sunspot maximum was reached during 1947; minimum is not expected until about 1954 or 1955; and another maximum might be expected about 1958. So the sun's bright disk will probably be relatively clear of large blemishes for at least another four or five years.

Science News Letter, June 21, 1952

MEDICINE

Watch Muscle-Skin Disease as Cancer Sign

➤ SOME PATIENTS may be saved from cancer deaths if doctors look for cancer in patients with the disease of muscles and skin called dermatomyositis, Drs. Arthur C. Curtis, Hoyt C. Blaylock and E. Richard Harrell of University Hospital, Ann Arbor, Mich., declared at a meeting in Chicago of the American Medical Association.

This disease, though uncommon, is not rare. Since 1934, there have been 45 patients with it at the University of Michigan hospital. Of these, eight had cancer which was not discovered until after the skin and muscle symptoms had developed.

Calcium deposits in the muscles which may break through the skin in ugly looking sores, a kind of rash, swelling around the eyes, and muscle weakness and shrivelling are among the symptoms of the disease of the eight patients. Six showed improvement in their dermatomyositis soon after X-ray or surgical treatment of their cancers.

Science News Letter, June 21, 1952

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GLARE-REDUCING GLASSES cut down annoying light from skies and sand by a metallic coating that is thicker at the top and bottom of the lenses than at the middle. Originally developed for the armed forces, the glasses are handy for policemen, truck drivers and others who use their eyes in bright sunlight for long periods of time.

Science News Letter, June 21, 1952

MECHANICAL PENCIL that takes standard lead four inches long has a spring affair built into the works so that, in normal use, the point yields to excess pressure without breaking. As soon as the pressure is removed, the point returns to its orginal length. The retracting action does not affect writing.

Science News Letter, June 21, 1952

DIAL LIGHT sockets of the single-wire type are easily mounted on chassis, dials or panels by slipping the units over punched, screwed-on or spot-welded metal tabs. Bayonet-base bulbs work in the sockets.

Science News Letter, June 21, 1952

AUTOMOBILE BATTERY that can be stored indefinitely is shipped "dry" to the dealer. Battery acid is sent in a separate container that keeps it ready for instant use. Just before the battery is sold, the acid is poured into the battery, generating the full charge since none is wasted during storage.

Science News Letter, June 21, 1952

TOY BELL BUOY can be blown up like a balloon, as shown in the photograph. It has a weighted base that keeps the buoy floating in the bathtub right-side-up while children are taking baths. Made of Vinylite plastic, the brightly colored buoy is about 10 inches tall and has a bell that tinkles when the toy is tipped.

Science News Letter, June 21, 1952

WORK GLOVES flecked with tiny, black, plastic dots take more punishment than ordinary canvas gloves, and last more than twice as long as conventional canton flannel fabric of the same weight. The closely spaced dots cover the working surfaces of the gloves, protecting them from hard wearing conditions.

Science News Letter, June 21, 1952

FENCING UNITS made of plastic-covered steel are stuck into the ground like croquet wickets, but are placed side by side to protect flowers, shrubs or young trees. The brightly colored units are weather-resistant and require no special care.

Science News Letter, June 21, 1952

SNAP-ON CREEPERS for babies still in diapers give added accident protection through a plastic lining that covers "the danger area." The one-piece garment is made of acetate rayon and knit jersey that does not need to be ironed. The plastic lining can be wiped clean quickly with a damp sponge or cloth.

Science News Letter, June 21, 1952

Do You Know?

The *highest land* of the Bimini Island group in the Bahama Islands is only 30 feet above sea level.

Hardly any *plant* can stand neglect as well as the chrysanthemum.

National prosperity has reduced *arson* cases substantially.

Almost 50 years ago a flock of 76 *trumpeter* swans was found in Montana after it was thought the species was extinct; the flock numbers 535 now.

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